# Coordinated Multicast Trees

83rd IETF, Paris
by
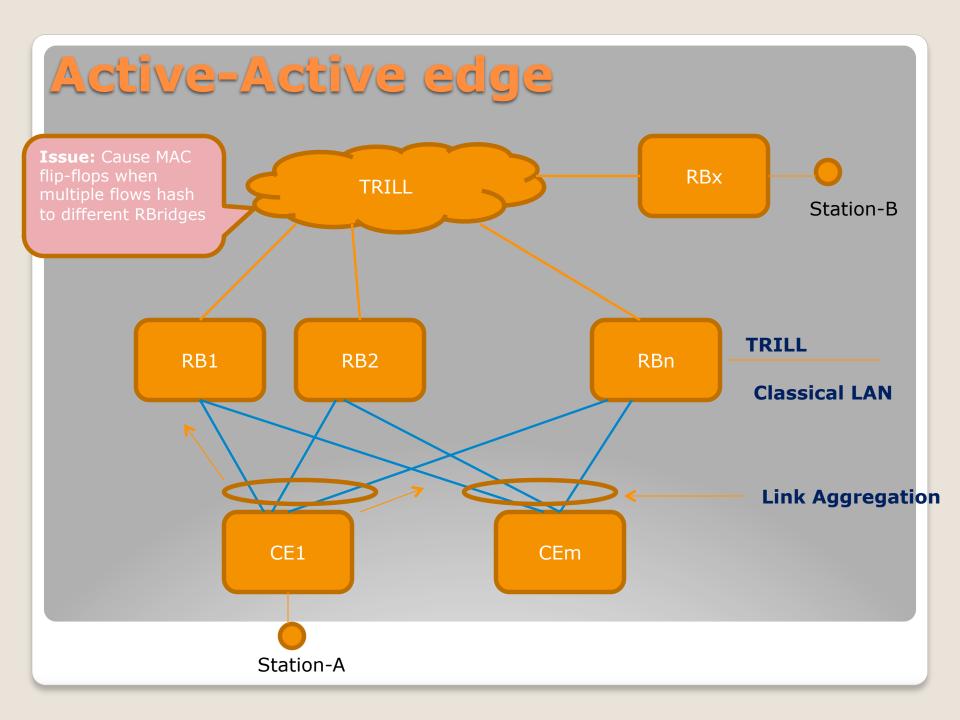
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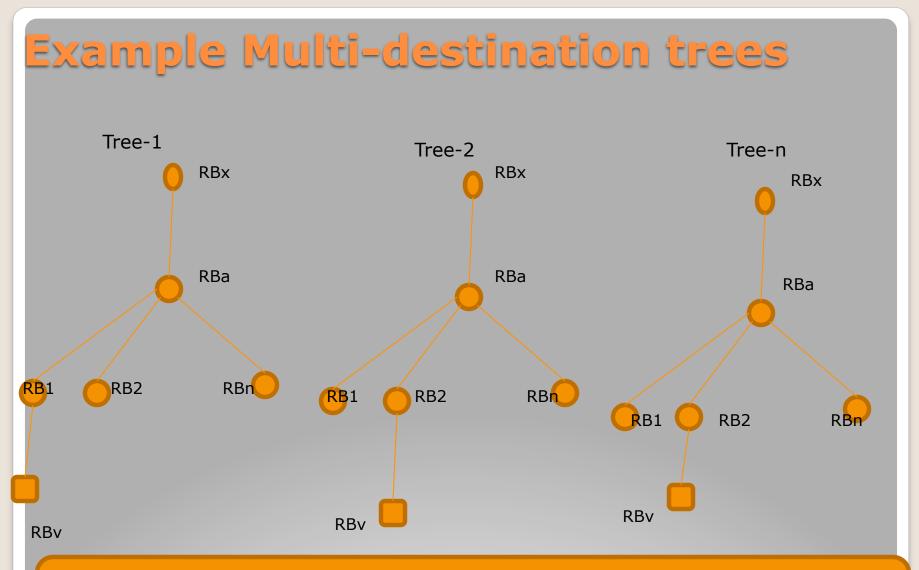*Shivakumar Sundaram*

# Problem space

- We discussed during the 82$^{nd}$ IETF in Taipei that active-active forwarding at the TRILL LAN edge as a typical deployment in Data centers.

- It was identified that a solution is required to solve potential RPF issues

- Group of Volunteers were nominated to propose a solution.

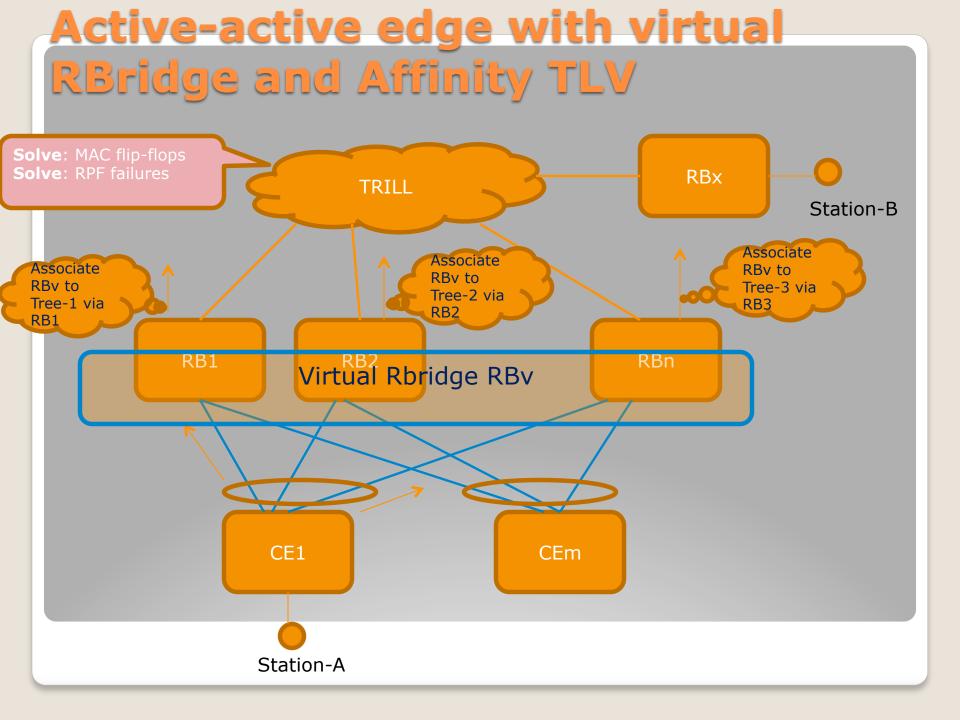- draft-tissa-trill-cmt-00 and this presentation are work of the team.

# Background

- RFC 6325 specifies methods to construct multi-destination trees and deriving the RPF states.

- The multi-destination trees are derived based on fixed parameters such as link-cost, system-id, nickname etc..

- There is no flexibility to associate a different path than the fixed algorithm mandates

- Methods proposed in this document allows to associate RBridges to a different path than the fixed algorithm proposes.

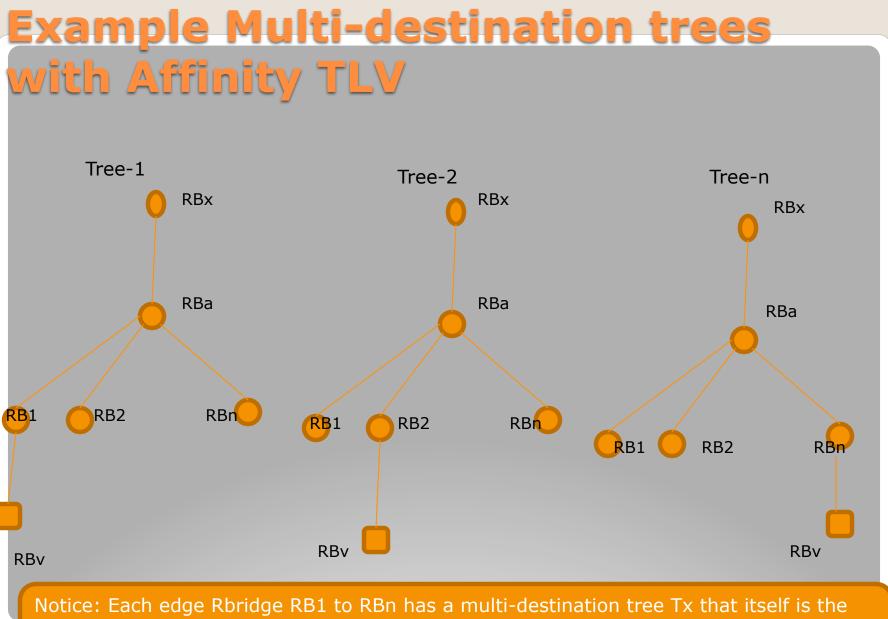# Active-Active edge



**Issue:** Cause MAC flip-flops when multiple flows hash to different RBridges

TRILL

RBx

Station-B

RB1

RB2

RBn

**TRILL**

**Classical LAN**

**Link Aggregation**

CE1

CEm

Station-A

# Active-Active edge with virtual RBridge

# Example Multi-destination trees

Tree-1

RBx

RBa

RB1    RB2    RBn

RBv

Tree-2

RBx

RBa

RB1    RB2    RBn

RBv

Tree-n

RBx

RBa

RB1    RB2    RBn

RBv

Notice: There is no tree that **RBn** can forward traffic with RBv as the ingress nickname Hence RBn can not forward multicast, broadcast, unknown unicast that it is receiving from CE nodes.

# Active-active edge with virtual RBridge and Affinity TLV

# Example Multi-destination trees with Affinity TLV



Tree-1

Tree-2

Tree-n

RBx

RBa

RB1   RB2   RBn

RBv

Notice: Each edge Rbridge RB1 to RBn has a multi-destination tree Tx that itself is the parent for RBv.

# Conclusions

- Solve RPF issues at the active-active edge
- Potential other applications
- Sub-TLV definitions are included in the rfc636bis
- Backward compatibility: Refer to Section 5.7
- Less number of Trees: Refer to Section 5.4.1

# Next Steps

- Requesting to Move in to a Working Group document status